

What is claimed is:

1           1.       A light directing apparatus comprising:  
2           a light emitting layer including an array of light emitting elements; and  
3           a light directing layer adjacent to the light emitting layer, said light directing layer  
4 including an array of light directing elements in substantial registry with said array of light  
5 emitting elements.

1           2.       The apparatus of claim 1 wherein said array of light directing elements includes  
2 a plurality of cylindrical lenses.

1           3.       The apparatus of claim 2, wherein each of said cylindrical lenses is spaced from  
2 a respective light emitting element from between about 1 to 3 times the distance between the  
3 respective light emitting element and an adjacent light emitting element.

1           4.       The apparatus of claim 1, further including means for indexing said light  
2 emitting layer relative to said light directing layer.

1           5.       The apparatus of claim 4, said means for indexing including complimentary  
2 molded features on said light emitting layer and said light directing layer adapted to align said  
3 light emitting layer with said light directing layer.

1           6.       The apparatus of claim 5, wherein said light emitting elements are arranged  
2 along a substrate to form a plurality of parallel stripes and said light directing elements are  
3 cylindrical lenses each of the lenses having a long axis parallel to a respective stripe.

1           7.       The apparatus of claim 1, further including a contrast-enhancing coating  
2 formed within inactive regions of the light directing apparatus.

1           8.       The apparatus of claim 1, further including an optical integration plate adjacent  
2 the light directing layer.

1           9.       The apparatus of claim 8, further including an optical adhesive between the light  
2 directing layer and the optical integration plate.

1           10.     The apparatus of claim 9 wherein said optical adhesive has an index of refraction  
2     that falls between an index of refraction of the light directing layer and an index of refraction of  
3     the optical integration plate.

1           11.     The apparatus of claim 1, wherein centers of the light directing elements are  
2     offset from centers of the light emitting elements.

1           12.     The apparatus of claim 1, wherein a distance between centers of adjacent light  
2     directing elements are different from a distance between centers of adjacent light emitting  
3     elements.

1           13.     The apparatus of claim 12, wherein the distance between centers of adjacent light  
2     directing elements is less than the distance between centers of adjacent light emitting elements.

1           14.     A light directing apparatus comprising:  
2             an LED array having RGB light emitting diode structures arrayed longitudinally along a  
3             substrate to form a plurality of RGB triplet groups; and  
4             a lenslet array having a plurality of lenslet structures, each one of the lenslet structures  
5             positioned adjacent a respective one of the RGB triplet groups, said lenslet structures including  
6             for each respective RGB triplet group a plurality of cylindrical lenses indexed to said respective  
7             RGB triplet group, said cylindrical lenses being longitudinally arrayed in parallel to said RGB  
8             light emitting diode structures.

1           15.     The apparatus of claim 14, wherein each of said lenslet structures is offset from  
2     each of said respective RGB triplet groups by an identical amount.

1           16.     The apparatus of claim 14, wherein a first of said lenslet structures is offset from  
2     a first respective one of said RGB triplet groups by an amount that is different than an offset  
3     between a second of said lenslet structures and said second respective one of said RGB triplet  
4     groups.

1           17.     The apparatus of claim 14, further including a contrast-enhancing coating  
2     formed within inactive regions of the light directing apparatus.

1           18.    A method for directing light from a display incorporating a plurality of light  
2 emitting pixel elements comprising:

3               directing light from a first of the plurality of light emitting pixel elements through a first  
4 light directing element; and

5               directing light from a second of the plurality of light emitting pixel elements through a  
6 second light directing element.

1           19.    The method of claim 18, further including:

2               directing the light from the first light directing element in a first preferential direction;

3 and

4               directing the light from the second light directing element in a second preferential  
5 direction different from the first preferential direction.